Periscope.

PHYSIOLOGICAL.

Recent Studies on the Physiology of the Cerebellum According to Ferrier. Rectification and Replies by Luciani. (*Reggio-Emilio*, 1893.) This article was called forth by Ferrier's inaugural address as President of the London Neurological Society. In this address Ferrier, while speaking of his own experimental researches regarding the functions of the cerebellum, discussed and criticised Luciani's views on that subject. Luciani found that Ferrier had made so many inaccurate and erroneous interpretations of his (L.'s) works, that to leave Ferrier's sayings unanswered would be equal to a surrender; that is, to the admission that his (L.'s) painstaking researches, the work of years, were practically without results.

L. begins by discussing the interpretation of the symptoms observed as the immediate effect of cerebellar ablation. He calls these symptoms "irritative," basing this conclusion upon the following facts: They are proportionate to the degree of the operative traumatism, or to the degree of inflammatory process called forth by the operation; they prevail in the muscles of the side, which has been exclusively or predominantly injured. If from the effect of a former extirpation of the vermis, part of the nerve fibres composing the fascicule peduncle is degenerated, subsequent ablation of a lateral lobe causes only slight symptoms of increased functional excitability.

The irritative symptoms observed by L. in dogs after hemi-extirpation of the cerebellum were disquietude, frequent lamenting howls, pleurothotonus; that is, curvature of the spine, with the concavity towards the operated side, tonic extension of the anterior extremities and a tendency to roll over the longitudinal axis from the operated to the healthy side. After total extirpation of the cerebellum, the symptoms were bilateral, the pleurothotonus being replaced by opisthotonus. In monkeys the tonic extension of the extremities was substituted by tonic flexion.

Ferrier denies the irritative character of these symptoms, and calls them dynamic or inhibitory. L. then criticises F.'s mode of operating; viz., the destruction of nerve centres by cauterization. He calls this procedure anti-physiological. He remarks sarcastically that if one intends to bring elements of disorder and confusion into a well arranged, clear and coherent series of experiments, if one proposes not only to destroy a certain centre but to also irritate the adjoining regions, Ferrier's method does excellent service. As an illustration, L. cites three experiments of his own, in one of which cauterization of the dura mater over the right side of the cerebellum without injury to the latter caused pleurothotonus on the healthy side, tendency to roll around the longitudinal axis from the healthy to the operated side, and general depression, that is, symptoms which were the opposite of what is observed after hemi-extirpation of the cerebellum.

L. then defends his theory which explains the phenomena observed some time after cerebellar ablations, when the irritative effects of the operation have passed and have been replaced by those which are the consequence of the newly formed cerebellar defect. He classifies these symptoms into three groups; the asthenic, atonic and astatic. He thinks that they are three various external manifestations of one internal process. The objection made by F. that according to clinical experience astasia and abasia of cerebellar origin may existwhile in a lying position yet the patient is able to perform with his legs any movement ordered with great "surety" and "rapidity" (L.'s correction of Ferrier's words is that these movements are performed with "energy" and "vigor") is to L. no proof against the validity of his theory. The above clinical experience only proves (says L.) that the static ataxy observed was neither dependent upon paresis nor paralysis, nor incoördination, but solely the result of asthenia; that is, lessening of energy and vigor of the muscles of the legs, making them unable to support the weight of the whole body, but not to raise and move the legs normally.

L further calls attention to the manner of swimming by dogs which have been deprived of one-half of their cerebellum. On account of the lessened vigor in the movements of the extremities of the operated side the body is inclined towards the latter so that the operated side is more deeply immerged in the water than the other. For the same reason the animals are not able to swim in a straight line, but are compelled to describe curves with deviation towards the healthy side. Ferrier contends that under the conditions mentioned the reverse would have to take place: viz., the animals would be compelled to describe curves towards the weakened side. To prove Ferrier's error L. justly calls attention to the manner of swimming of the dogs, which consists in downward, inward, backward movements of the paws. The asthenia (continues L.) also shows itself in the station of the operated dogs. They keep the extremities of the operated side in exaggerated, abducted position, thus creating a broader base for the support of the body and diminishing the work of the weakened muscles.

According to L. the second group of disturbances following cerebellar ablations (at the time when the irritative symptoms have disappeared), viz., the "neuro-muscular atony" has nothing directly to do with the tendon reflexes. The author contends that exaggerated tendon reflex would be no proof against an atonic state of the muscles in question; as a rule some time after the operation the tendon reflexes become indeed somewhat exaggerated.

One manner of manifestation of the neuro-muscular astasia is the exaggerated manner in which the limbs are raised and put down in walking. L. has do objection to make against Herbert Spencer's (cited by Ferrier and Ross) hypothesis concerning the function of the cerebellum. The result of his researches harmonizes with the theory that "the cerebellum regulates the continuous and tonic muscular contractions." L. makes a distinction between this continuous functional influence of the cerebellum.

The author feels complimented that his researches have made such a deep impression on Ferrier's mind, and particularly that he now no more speaks of the cerebellum as of an organ of equilibrium, nor as of an accumulation of unconscious centres of reflex adaptation. If Ferrier had not felt too sorry for being compelled to give up his previous ingenious hypothesis concerning the physiology of the cerebellum he would now be one of the strongest, and certainly most competent, supporters of his (L.'s) doctrines.

In conclusion, the author calls attention to some of the inexactitudes in Ferrier's last publication. As an example, he mentions that according to the corresponding photographs, two-thirds of the cerebellum had remained intact in a case which Ferrier and Turner described as complete extirpation of the cerebellum. ONUF.

Is there Hysterical Nystagmus? Sabrazes, (*Semaine Med.*, Sept. 26, 1894).

Such is the question which the author answers in the affirmative. After discussing the various affections in which nystagmus may be an important symptom, and after quoting the dictum of Charcot, that nystagmus is never found in hysteria, the author relates a case, which is